The Digital Revolution, from Ada to Zuckerberg

Taught by Professor Walter Isaacson

Course Description:

This course will explore the history of the digital revolution from the 1830s to the present. It will begin with Ada Lovelace and the conception of a general-purpose computer and culminate with the creation of social networks and the sharing economy. Special attention will be paid to the three inventions that created the digital age: the computer, the microchip, and the internet.

The themes will include the importance of collaboration in innovation, the need to connect the humanities and the sciences, and how networked digital technology disrupts traditional hierarchies. We will look at what makes a successful digital business. We will also debate two schools of thought that have developed since Alan Turing asked whether machines would ever be able to think like humans: those who pursue artificial intelligence versus those who focus on ways to use machines to augment human intelligence. This is a 3 credit hour course that fulfills the NTC 1st Tier Writing requirement and the Textual and Historical Perspectives requirement.

Coursework and Assessment:

Grades will be based on:

> Making comments during class discussions (15%)

> A midterm (20%).

> A final exam (25%).

> A research paper (25%).

> Participating on the Discord class server discussion (15%)

Ex. A = > 90%

B =	80 to < 90%
C =	70 to < 80%
D =	60 to < 70%
F =	< 60%

Lectures: All lectures and extra videos can be found on this playlist: https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Midterm Exam: The exam will consist of short answer questions covering material discussed during the first half of the course. The exam will be open book and open note.

Final Exam: The exam will consist of short answer questions covering material discussed over the entire semester. The exam will be open book and open note.

Research Paper: Your research paper should be between 8-10 pages. The topic of the paper to discussed in class. The papers are due by midnight on Sunday, **April 14**. You should cite your sources according to the *Chicago Manual of Style*:

www.chicagomanualofstyle.org/tools_citationguide.html

Links to an external site.

Discord Server: There will be class discussion threads set up on Discord. Class members should regularly contribute to the discussions with comments and questions.

Attendance Policy: This is a conversation class, which means a major part of the work of the class comes from our discussions. The knowledge and skills you will gain in this course highly depend on your participation in class learning discussions. You are expected to attend all class sessions unless you are ill or have a valid reason for missing. I plan to track class attendance to help me understand how and when students are engaging in the course. If you are ill or have another valid reason for missing, please contact me by email in advance of the absence.

Departmental Learning Goals:

1. Knowledge of historical facts and ideas over a broad period of
2. An ability to evaluate historical
3. An understanding of the concept of change over
4. Recognition that there are different perspectives on the
5. Writing skills that are coherent and

Student Objectives/Outcomes:

1. Students will read, watch, and discuss the major technological changes from 1830 to present from a wide variety of sources and perspectives.
2. Students will analyze the historical facts presented using critical thinking skills to evaluate the technological revolution in a broader historical context.
3. Students will be challenged to recognize the evolution of legal, economic, and philosophical environments and their affects on the progression of technology.
4. Students will recognize, evaluate, and appreciate both the values and consequences of past perspectives on emerging technology.
5. Students will produce creative, cohesive, and well-informed writings examining the progression of technology and its place in the broader history.

Required texts

Walter Isaacson, *The Innovators* (You can use this for the open-book exams.)

Steven Levy, Hackers. Pp. 3-60, 201-248.

Kathy Kleiman, *Proving Ground* pages 1-31, 165-189. (relevant sections will be posted to Canvas.)

Alan Turing, "Computing Machinery and Intelligence", https://academic.oup.com/mind/article/LIX/236/433/986238

Links to an external site.

Various news articles relating to class content as stories break (also posted to canvas)

Video lectures: https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Spring 2023 Class Schedule

Jan. 16:

Lecture: Introduction to the course (https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

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Reading: *The Innovators*, pp 1-5.

Discussion question: What are your preliminary ideas about the paper you plan to write?

Jan. 18:

Lecture: 2. Ada Lovelace
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, chapter 1.

Ada Lovelace, Sketch of the Analytical Engine and Translator's Notes, Oct. 1842:
http://www.fourmilab.ch/babbage/sketch.html

Links to an external site.

Discussion question: Do you think technology reduces the number of jobs?

Jan. 23:

Lecture: 3. "Claude Shannon on circuits" and 4. "Early computers of the 1940s"
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, 35-62

Discussion question: Why did computers become binary?

Jan. 25:

Lectures: 5. "Mauchly and ENIAC," and 6. "Bletchley Park, Turing, Colossus"
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, pp. 62-79

Discussion question: Who do you think deserves credit for inventing the modern computer?

Jan. 30:

Lectures: 9. “Can Machines Think?”
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, 122-129

Alan Turing, “Computing Machinery and Intelligence”,
https://academic.oup.com/mind/article/LIX/236/433/986238

Links to an external site.

Discussion question: Can machines think?

Feb. 1:

Lecture: 10. “The transistor”
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Readings: *The Innovators*, 131-154. Isaacson, Review of *The Idea Factory*, *New York Times*,
http://www.nytimes.com/2012/04/08/books/review/the-idea-factory-by-jon-gertner.html

Links to an external site.

Discussion question: Why was the invention of the transistor important?

Feb. 6:

Lecture: 11. “The microchip”
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Readings: *The Innovators*, 157-199.

Discussion question: Why was the invention of the microchip important?

Feb. 8:

Lecture: 12 & 13 Video games.
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Videos: “How three men in a bar launched the video game industry”

https://www.youtube.com/watch?v=-zSGTcvtDYk

Links to an external site.

Reading: The Innovators, chapter 6.

Extra reading: The opening of Steven Levy’s *Hackers*,
http://www.gutenberg.org/cache/epub/729/pg729.html

Links to an external site.

Discussion question: How did video games influence computers?

Feb. 15:

Lectures: 7. “Grace Hopper and Programming,” and 8. “The Women of ENIAC”
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

YouTube video: “Jean Bartik and the ENIAC Women” (in playlist)
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

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Reading: *The Innovators*, 87-118.

Extra suggested reading: Kathy Kleiman, Proving Ground, pp. 1-25, 172-189 Excerpts are on canvass.)

Discussion question: What was the role of women in creating the early computers?

Feb. 20:

Lectures: 14 & 15 Personal computers
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, chapter 8

Discussion question: What was the great advance of the Apple II over the Altair?

Feb. 22:

Lecture: 16. Bill Gates and software: DOS and Windows
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, 313-343, 356-381

Discussion question: How did software become more important than hardware in personal computers?

Feb. 27:

Human-Computer interfaces

Lecture: 17. Human-Computer Interfaces and Engelbart
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Lecture: 18. Human-Computer Interfaces, Alan Kay and Xerox PARC
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Videos: Doug Engelbart, excerpts from the “Mother of All Demos”

https://www.youtube.com/watch?v=B6rKUf9DWRI

Links to an external site.

Readings: The Innovators, 272-294.

Discussion question: What is a computer interface and why is it important? What did Steve Jobs "steal" from Xerox PARC?

Feb. 29:

Midterm.

March 5:

Lecture: 20. Who Invented the Internet?
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Readings: *The Innovators*, chapter 7.

Question: What is packet switching?

March 7:

Lecture: 21. The World Wide Web and Tim Berners-Lee
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, 405-433.

Discussion question: What was the difference between the web and the internet?

March 12:

Lecture: 21. The World Wide Web and Tim Berners-Lee
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, 405-433.

Discussion question: What was the difference between the web and the internet?

March 14:

TBD

March 19:

Lecture: 22. Justin Hall, Ev Williams, and blogging
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, 422-446

Discussion question: How did user-generated content change the Web?

March 21:

Class discussion of Wikipedia

Reading: *The Innovators*, 433-446

Discussion question: Why does Wikipedia work so well?

April 2:

Lecture: 23 & 24. Early internet directories; Larry Page, Sergey Brin, and search engines
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *The Innovators*, 446-465

Discussion question: Why did Google win?

April 4:

Lecture: 25. The iPhone and Steve Jobs.
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *Steve Jobs* (on Canvass), 465-475

Video: Steve Jobs introduces the iPhone

https://www.youtube.com/watch?v=MnrJzXM7a6o

Links to an external site.

Discussion question: Why was the user interface of the iPhone so important?

April 9:

Lecture: 26. Apps and the new economy
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Reading: *Steve Jobs*, 500-510.

Discussion question: What gave rise to the sharing economy of Uber and AirBnb?

April 11:

Lecture: 27. Microsoft, Google, Amazon Antitrust cases
https://www.youtube.com/playlist?list=PLnJFOBz2SCeebYYbKETRjS_R2gSKpmdM0

Links to an external site.

Readings: The latest news stories of Google, Amazon, and Facebook cases.

Tom Wheeler, "The Justice Department's lawsuit against Google," Majority Report, House Subcommittee on Antitrust. Sep 2020, Executive summary pages 9-20, https://judiciary.house.gov/uploadedfiles/competition_in_digital_markets.pdf

Links to an external site.

Class Discussion questions: How is the Google case similar to the cases of Standard Oil and of Microsoft? What issues in the Microsoft antitrust case apply to Amazon and Google?

April 16:

Class discussion: Uber, Airbnb, and the sharing economy

Readings: Senator Mark Warner, address to the MIT On- Demand Economy conference, https://www.scribd.com/document/308440699/03-22-2016-MIT-ODE

Links to an external site.

; Isaacson, "How Uber and Airbnb Became Poster Children for the Disruption Economy," New York Times, June 19, 2017, https://www.nytimes.com/2017/06/19/books/review/wild-ride-adam-lashinsky-uber-airbnb.html

Links to an external site.

; Harvard Kennedy School, Uber, Airbnb and consequences of the sharing economy, https://journalistsresource.org/studies/economics/business/airbnb-lyft-uber-bike-share-sharing-economy-research-roundup/

Links to an external site.

Discussion: What is good and what is bad about Uber?

April 18:

Lecture: 28 & 29 Section 230

Reading: Vox, Section 230, https://www.theverge.com/21273768/section-230-explained-internet-speech-law-definition-guide-free-moderation

Links to an external site.

; Yevgeney Simkin, "The Real Reason to Nix Section 230" https://thebulwark.com/the-real-reason-to-nix-section-230/

Links to an external site.

Discussion question: How would you modify section 230?

April 23:

Facebook, Discord, and social networks.

Video: Mark Zuckerberg congressional testimony, July 29, 2020,

https://www.youtube.com/watch?v=CmggBdsiruk

Links to an external site.

Readings: The Conversation, "Facebook is tilting the political playing field," https://theconversation.com/facebook-is-tilting-the-political-playing-field-more-than-ever-and-its-no-accident-148314

Links to an external site.

; Jamelle Bouie, Facebook has been a disaster, https://www.nytimes.com/2020/09/18/opinion/facebook-democracy.html

Links to an external site.

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Discussion question: Does Facebook connect us or divide us? What is a better social network: Discord of Facebook, and why?

April 25: TBD

April 30: Last class – final exam